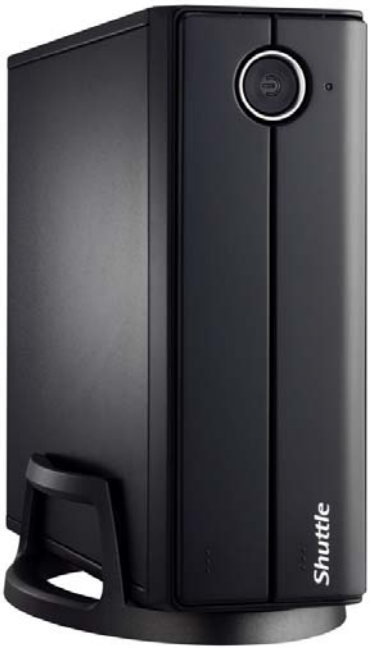
Efficient and powerful 3-litre PC

The ultra-compact Shuttle Slim-PC Barebone XH97V is an ideal basis for a small, but powerful Mini PC. Not only is it suitable for a low-noise home-media PC with support of 4K displays, it also meets the requirements towards an office PC and industrial applications. Its three digital video outputs allow for operating three displays at the same time. In a team with 22nm socket LGA1150 Intel "Haswell" processor and a 2.5" SSD drive the XH97V makes for a power-efficient and reliable system for a wide range of applications. The built-in heatpipe cooling ensures the system runs quietly at maximum stability.

Shuttle Slim-PC Barebone
XH97V Black



Images for illustration purposes only.
The vertical stand is available optionally.

Feature Highlights

Slim-Design	• Slim 3.5 litre chassis, black • Dimensions: 24 x 20 x 7.2 cm (L/W/H) • Bays: 2x 6.35cm/2.5" for hard disks or SSDs and 1x optical slimline drive • Max. operating temperature: 0~50°C
Processor	• Supports LGA1150 "Haswell" processors: Core i7 / i5 / i3, Pentium, Cel. (max. 65W) • Including heatpipe cooling system
Chipset	• Intel H97 Chipset
Memory	• 2x 204 pin SO-DIMM slots • Supports DDR3-1333/1600, max. 2x 8 GB
Graphics	• Integrated Intel HD graphics supports 4K Ultra HD (Depending on processor [5]) • Video outputs: HDMI 1.4, 2x DisplayPort 1.2 • Supports three independent displays
Drive Connectors	• 3x Serial ATA max. 6 Gbps, supports RAID • Two pre-installed SATA cables (HDD+ODD)
Other Connectors	• 5.1 HD Audio (digital audio via HDMI/DP) • 4x USB 3.0, 4x USB 2.0 (each 2 front, 2 rear) • Gigabit LAN (RJ45), COM port (RS232)
Optional Accessories	• Vertical stand (PS01), 3.5" HDD rack (PHD4) • VESA mount (PV02), WLAN kit (WLN-S) • Mylar cover (MY01)
Power Supply	• External 90W fanless power adapter
Applications	• Home, office, vertical market

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UPC bar code: 811686006848

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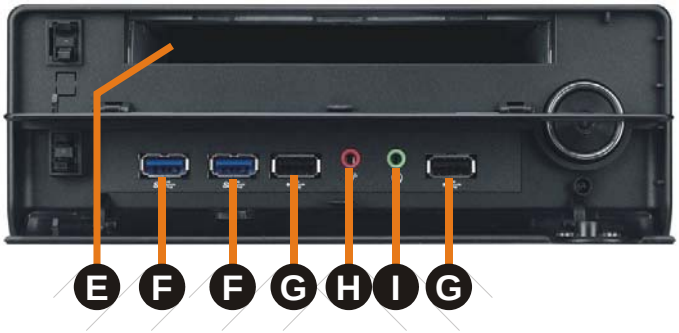
Shuttle Slim-PC Barebone XH97V – Front and Back Panel

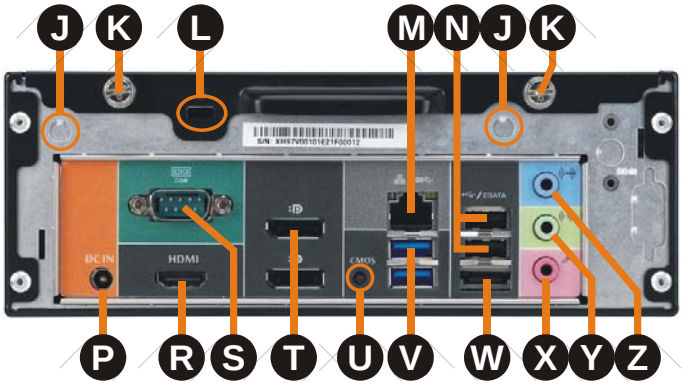
Front Panel

- **A** Button for accessing the I/O ports
- **B** Button for accessing the optical drive
- **C** LED indicator for hard disk activity
- **D** Power on button with LED
- **E** 5.25“ bay for optical slimline drive (DVD or Blu-ray)
- **F** 2x USB 3.0 ports
- **G** 2x USB 2.0 ports
- **H** Microphone input
- **I** Headphone output



Back Panel

- **J** 2x perforation for optional WLAN antennas
- **K** 2x thumbscrews
- **L** Hole for Kensington Lock
- **M** Gigabit network (RJ45)
- **N** 2x USB 2.0
- **P** Connector for power adapter
- **R** HDMI Video/Audio output
- **S** RS232 serial interface (COM port)
- **T** 2x DisplayPort Video/Audio output
- **U** Clear CMOS button
- **V** 2x USB 3.0
- **W** External Serial ATA
- **X** Microphone input
- **Y** Headphone / line-out
- **Z** Audio line-in



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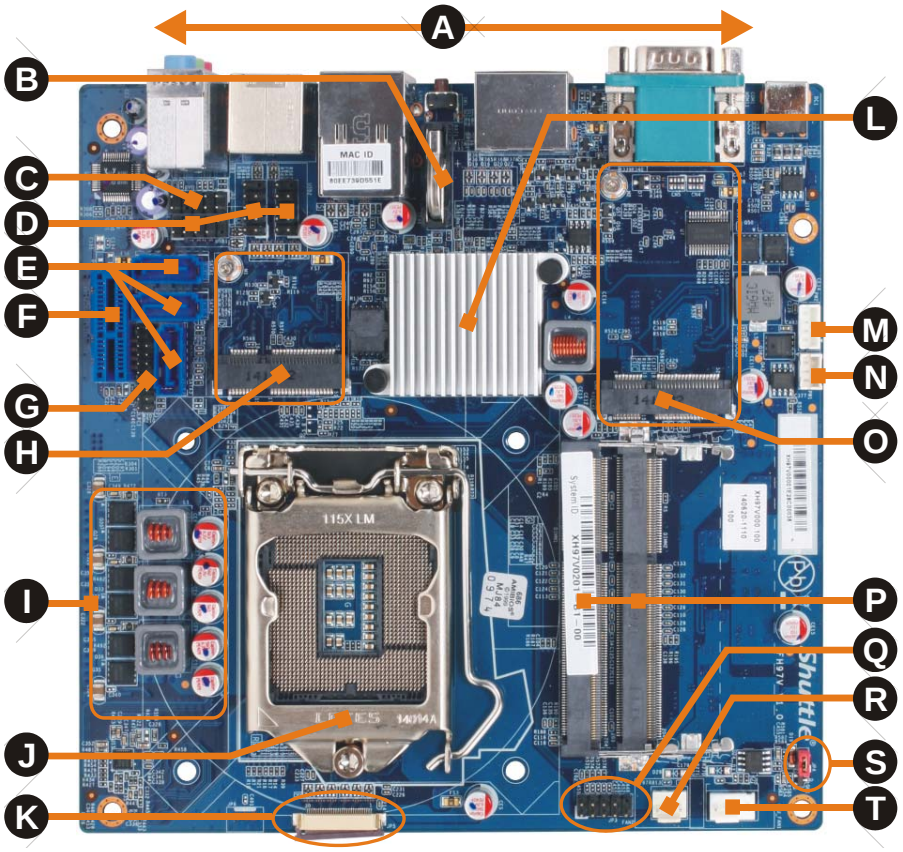
Shuttle Slim-PC Barebone XH97V – Mainboard



- **A** Back panel (rear side)
- **B** CMOS Battery
- **C** Front Audio Header
- **D** 3x USB 2.0 Header (one occupied)
- **E** 3x Serial ATA 6G
- **F** PCI-Express X1 Slot (cannot be used)
- **G** LPC-Slot
- **H** Half-Size Mini-PCIe
- **I** CPU Voltage Regulator
- **J** LGA1150 CPU Socket
- **K** Connector for Front USB 3.0 Ports
- **L** Intel H97 Chipset
- **M** SATA Power 5V
- **N** SATA Power 12V
- **O** Full-Size Mini-PCIe supports mSATA
- **P** 2x SO-DIMM Slots
- **Q** Connector for Front Buttons and LED‘s
- **R** Fan Connector (Sys.)
- **S** Always-On-Jumper JP4
- **T** Fan Connector (CPU)

Supports three drives

The XH97V supports one optical drive in 5.25” slimline format and two 2.5” drives (e.g. hard disk and SSD). The second 2.5” drive requires an additional SATA cable and mounting screws which is not included. The storage drives (hard disk and optical drive) are not included in the delivery of XH97V.
Caution: for high ambient temperature over 40°C we strongly recommend to use SSDs instead of hard disk drives.

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Optional Accessories for XH97V

Vertical Stand (PS01)

The XH97V is to be used in horizontal operation by default. The optional stand PS01 allows to be used in upright position also.

VESA75/100-mount (PV02)

The optional VESA mount allows it to be installed on to walls or affixed to the rear side of a monitor.

WLAN-Kit (WLN-S)

Wireless LAN adapter with two external antennas supports IEEE 802.11b/g/n at max. 300 Mbit/s.

3.5“ Hard Disk Rack (PHD4)

PHD4 allows for installation of one 3.5" hard drive. However doing so means no other drives such as a slimline DVD drive or a 2.5" HDD/SSD can be used.

Drive bay cover

Cover for the slimline drive bay.
Please contact Shuttle for "Mylar POI-MY01". [6]

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Connectivity / Applications

The XH97V's wealth of ports qualifies it for a wide range of applications and external devices.

The XH97V is your powerful 3.5-litre Slim-PC solution for high performance driven applications, e.g.:

- Digital Signage
- In-store Audio/Video entertainment
- Gambling
- Home-Media
- Office
- Call Centre
- Education
- Kiosk
- Point of Sales (POS)
- Medical
- Automation
- Small server

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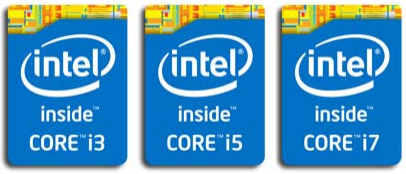
Shuttle Slim-PC Barebone XH97V – Product Features

The 3.5-litre chassis - a clean and modern look

Shuttle has always placed great emphasis on the interior and exterior aesthetics of their Mini-PCs with the belief that a good blend of style and form factor allow the Mini-PC to be attractive, versatile and work well in almost any environment. And the XH97V was designed just like that and shines in a clean and modern appearance. The optical drive and front panel connectors are elegantly concealed behind drive doors to provide maximum protection. This tiny tot barely stands 7.3 cm in height with a volume of 3.5 litres.

What does Barebone mean?

The Shuttle Slim-PC Barebone XH97V consists of a stylish case with pre-installed mainboard, cooling system and external power adapter. Despite its small form factor it offers outstanding connectivity, functionality and performance. For a complete Mini-PC system, a few components still need to be added. The Mini-PC is customisable and takes socket 1150 processors (TDP max. 65W), DDR3 SO-DIMM memoy, slimline SATA optical drive and 2.5" hard disk (or SSD). Once the desired operation system is installed, the XH97V is ready to use. Moreover, the system features pre-routed cables that are tied down from factory to reduce clutter, increase airflow and ease component installation.



Supports LGA1150 processors and up to 16 GB DDR3

A large number of socket 1150 Intel "Haswell" processors (also "Haswell Refresh") is available ranging from Celeron to Core processors with a maximum TDP of 65W. Plus, up to a maximum capacity of 16 GB of DDR3 memory can be fitted.

Low noise thanks to heatpipe cooling system

An active dual-fan heatpipe cooling system ensures whisper-quiet operation and system stability. A heatpipe is a hollow tube containing a heat transfer liquid. As the liquid evaporates, it carries heat to the cool end, where it condenses and then returns to the hot end. Heatpipes thus have a much higher effective thermal conductivity than solid materials. Please keep the vent holes clear.

Energy-saving

The power consumption mainly depends on the processor used and its load. If an Intel Core i3-4130 (3,4 GHz, TDP = 54W) processor is installed, the system consumes about 17W in idle mode. Under full load, the power consumption is 58W.

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Extended temperature range and reliability

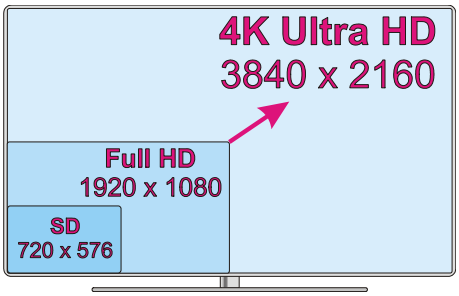
The XH97V is outstandingly robust thanks to its tough chassis, and with an operating temperature range of 0-50 °C it is suitable for use in the most demanding environments. Designed entirely using all solid capacitors, XH97V is guaranteed to deliver maximum stability, reliability and longer system lifetime for long-term applications like digital signage.
Caution: for high ambient temperature over 40°C we recommend to use Solid State Disks (SSDs) instead of Hard Disk Drives (HDDs).

Great Connectivity

On the front, elegantly hidden from view behind drive doors, the panel reveals four USB ports two of which being USB 3.0. There are also two 3.5mm jacks for headphone and microphone. In addition, the back panel offers a wide range of I/O connectivity as well.

Triple Display with HDMI and 2x DisplayPort (optional VGA)

The XH97V features three digital video outputs: one HDMI 1.4 and two DisplayPorts 1.2. Triple View technology offers multiple display support on up to three separate monitors. This helps improve on productivity by allowing for spreading multiple windows across two monitors while working with them simultaneously.



Supports 4K Ultra HD at 60Hz

The XH97V supports displays running at 4K (3840 x 2160 / 2160p) high resolution when connected to its DisplayPorts video outputs. As the successor to the Full HD standard, Ultra HD delivers a four times higher resolution with a wider colour space and colour depth.
An Intel Core i3 processor or higher is recommended for smooth 4K (2160p) video playback. [5]

One serial port

Many PCs do not have these legacy ports any longer, since they have been superseded and replaced by USB for most consumer applications, but they are still commonly used for applications such as industrial automation systems, scientific analysis, POS systems and other industrial applications. The XH97V features one serial RS-232 port.

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2x expansion slots for Mini-PCI-Express cards

The XH97V features two expansion slots for Mini-PCIe cards. One is a half size slot dedicated for an optional Wireless LAN adapter. The second has full size format and not only features a PCIe interface, but also mSATA (Mini Serial ATA), supporting the new generation of Solid State Drives (SSD) in a compact Mini PCIe card form factor.
Pictured: half size WLAN card (left) and mSATA SSD card (right).

Kensington Lock

This is a small, metal-reinforced hole as part of an anti-theft system. (The lock-and-cable are not included)

Power on after Power fail

The BIOS setup provides a "Power-On after Power Fail" function that can be found under "Power Management Configuration". As the name indicates, this function determines the PC's behaviour after power failure: (1) unconditional power on, (2) restore former status or (3) keep system turned off. As a matter of the nature of this function, it may fail after short power failures. This is why the XH97V also comes with a hardware-based solution. By removing Jumper 4 (see image) the system will start unconditionally once power is applied.

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XH61V versus XH81(V) versus XH97V

Comparison of the 3-litre Slim-PCs

Barebone model	XH61V	XH81, XH81V	XH97V
Availability	June 2012	September 2014	October 2014
SKUs	**XH61V Black**	**XH81V Black** **XH81V White** **XH81 Black (open front)**	**XH97V Black**
Intel processor support	3rd Gen. Intel Core LGA1155 TDP max. 65W	4th Gen. Intel Core LGA1150 TDP max. 65W	4th Gen. Intel Core LGA1150 TDP max. 65W
Chipset	Intel H61	Intel H81	**Intel H97**
Graphics	DVI-I (1080p/60) HDMI (1080p/60)	DisplayPort (2160p/60) HDMI (2160p/30) VGA (optional)	**2x DisplayPort** (2160p/60) HDMI (2160p/30)
Supported Displays	max. 2 Displays	max. 2 Displays	**max. 3 Displays**
Serial ATA	3x SATA 3G	2x SATA 6G 1x SATA 3G	**3x SATA 6G, RAID 0,1** **1x External SATA 3G**
LAN	Dual Gigabit Realtek 8111E	Dual Gigabit Realtek 8111G	**Single Gigabit** Realtek 8111G
Audio	Realtek ALC662 5.1 Line-Out S/PDIF	Realtek ALC662 5.1 Line-Out	Realtek ALC662 5.1 Line-Out
Front USB	2x USB 2.0	2x USB 2.0 2x USB 3.0	2x USB 2.0 2x USB 3.0
Rear USB	2x USB 2.0 2x USB 3.0	4x USB 2.0	2x USB 2.0 **2x USB 3.0**
Serial Ports	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	**1x RS232**

Front Views

XH61V, XH81V, XH97V

XH81V White

XH81 (Open Front)

Rear Views

XH61V

XH81, XH81V

XH97V

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Shuttle Slim-PC Barebone XH97V Specifications

Chassis	Slim X-type chassis, colour: black or white Dimensions: 240 x 200 x 72 mm (LWH) = 3.5 litres Weight: 2.2 kg net, 3.5 kg gross Covers for optical drive and front panel connectors Hole for Kensington Lock at the back panel Operation position horizontal or even vertical with the optional stand PS01
Storage Bays	XH97V features three drive bays: **1)** supports one optical drive (ODD) in 5.25" slimline format with max. 12.7 mm height - this bay can alternatively be used for a 2.5" drive **2)** upper 2.5" bay supports one 2.5" drive with max. 12.7 mm height **3)** lower 2.5" bay supports one 2.5" drive with max. 9.5 mm height Note: The storage bays support one optical drive (DVD or Bluray) and two 2.5" drives (SSD or hard disks). Alternatively you can also use three 2.5" drives. However, the package includes pre-installed cables (for SATA and power) and mounting screws for one 2.5" drive and one for one optical slimline drive.
Operation System	This system comes without operating system. It is compatible with Windows 8 / 8.1, Windows 7, Linux
Mainboard Chipset BIOS	Mainboard FH97V, Mini-ITX form factor 17 x 17 cm, 8 layer design Chipset: Intel® H97 Chipset (Intel® DH82H97 PCH, code name "Wildcat Point") AMI BIOS in 8 Mbit EEPROM with SPI interface All capacitors are high quality solid capacitors Supports hardware monitoring and watch dog functionality Supports Unified Extensible Firmware Interface (UEFI) Supports power on after power failure [1]
Power Adapter	External 90 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz Output: 19 V DC, 4.74 A, max. 90 W DC Connector: 5.5/2.5mm (outer/inner diameter)
Processor Support	Socket LGA 1150 (H3) supports the fourth generation of Intel Core i7 / i5 / i3 / Pentium / Celeron processors Maximum processor power consumption (TDP) supported: 65W Codename "Haswell", 22nm process technology, up to 8 MB of L3 Cache Supports the new generation of "Haswell Refresh" processors Not compatible with older Socket LGA 1155 processors. Does not support the unlock-function of Intel K-Series processors. The processor integrates PCI-Express, memory controller and the graphics engine on the same die (depending on processor used) Please refer to the support list for detailed processor support information at global.shuttle.com.
Heatpipe Cooling	Processor cooling with heatpipe technology and two fans (6cm)

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Memory Support	2x SO-DIMM slots with 204 pins Supports DDR3-1333/1600 SDRAM memory (PC3-10600/12800) The maximum memory clock rate depends on the processor type. Supports Dual Channel mode Supports max. 8 GB per DIMM, maximum total size of 16 GB Supports two unbuffered DIMM modules of 1.5V
Integrated Graphics	The features of the integrated graphics function depend on the used processor type. Three digital video outputs: 2x DisplayPorts 1.2 and 1x HDMI 1.4 - supports three independent displays simultaneously - supports Full HD resolution at 1920x1200 (1080p/60Hz) - supports 4K Ultra HD resolution at 3840 x 2160 via DisplayPorts (2160p/60Hz) and HDMI (2160p/30Hz) [5] - supports Blu-ray (BD) playback with HDCP - supports HD video plus multi-channel digital audio via a single cable.
Audio	Audio Realtek® ALC 662 5.1-channel High-Definition Audio Three analog audio connectors (3.5mm) at the back panel: 1) Front line-out (headphone) 2) Rear Surround line-out (shared with microphone input) 3) Center line-out (shared with line-in) Digital audio output is provided via HDMI and DisplayPort.
Gigabit LAN Controller	Realtek 8111G Ethernet network controller (Gigabit) Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)
Mini-PCIe slots	Features two Mini PCI Express expansion slots: 1) half size, supports PCIe 2.0 and USB 2.0, e.g. for WLAN cards [4] 2) full size, supports PCIe 2.0, SATA 6G and USB 2.0 e.g. for Mini SATA (mSATA) flash memory cards [3]
Drive Connectors	3x Serial-ATA connectors, max. 6 Gbps 1x external Serial-ATA (eSATA), max. 3 Gbps 1x mSATA (Mini PCIe slot), max. 6 Gbps [3] Supports RAID 0, RAID 1 Supports Intel® Rapid Storage Technology 13 (RST) Supports Intel® Smart Response Technology (SRT) Supports NCQ, AHCI and Hot Plug Note: The package includes pre-installed cables (for SATA and power) and mounting screws for one 2.5" drive and one for one optical slimline drive.
Front Panel Connectors	Microphone input Audio Line-out (headphone) 2x USB 3.0 2x USB 2.0 Power button Power LED (blue) HDD LED (yellow)

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Back Panel Connectors	2x DisplayPort 1.2 audio/video output [2] HDMI 1.4 audio/video output 2x USB 3.0 2x USB 2.0 GigaBit LAN (RJ45) RS232 serial port External Serial ATA (eSATA 3G) Audio Line-in Audio Line-out Audio Mic-in Clear CMOS Button Perforation for Wireless LAN antennas (2 holes) Hole for Kensington Lock
Other Onboard Connectors	Power on after power fail (hardware solution, Jumper 4) [1] Front connectors for power button, LEDs, USBs, audio ports Three headers 2x5 pins for dual USB 2.0 (one occupied) 4 pin fan connector occupied by the heat-pipe system fans 3 pin fan connector (free) LPC interface (2x10-pin header, 2 mm pitch)
Accessories	Multi-language user guide Driver DVD 2x cable for SATA (pre-installed for 2.5 HDD/SSD drive and optical slim drive) 1x 4-pin to SATA power cable External power adapter with AC power cord CPU heatpipe cooling system with heatsink compound Screws
Environ-mental Specification	Operating temperature range: 0~50°C [7] Relative humidity range: 10~90% (non-condensing)
Optional Accessories	(1) Vertical stand (PS01) (2) VESA mount (PV02) (3) WLAN module (WLN-S) [4] (4) Cover for slimline drive bay [6] **(5) 3.5" Hard Disk Rack (PHD4) [8]**
Conformity and Certifications	EMI: FCC, CE, BSMI, C-Tick Safety: CB, BSMI, ETL Others: RoHS, Energy Star V5.0, EuP Lot 6 This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office. The CE-mark approves the conformity by the EU-guidelines: - EMV-guideline 89/336/EWG electromagnetic tolerance - LVD-guideline 73/23/EWG use of electric devices within certain voltage-limits

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[1] Power on after power fail:
The BIOS setup provides a "Power-On after Power Fail" function that can be found under "Power Management Configuration". As the name indicates, this function determines the PC's behaviour after power failure: (1) unconditional power on, (2) restore former status or (3) keep system turned off. As a matter of the nature of this function, it may fail after short power failures. This is why the XH97V also comes with a hardware-based solution. By removing Jumper 4 (on the mainboard near the "Shuttle" imprint), the system will start unconditionally once power is supplied.

[2] Convert the DisplayPort into HDMI/DVI
The DisplayPorts can be converted into HDMI or DVI by a relatively inexpensive passive adapter cable. For example:
DELOCK 82590: 1m, Displayport (male, 20p) to HDMI-A (male, 19p)
DELOCK 82435: 5m, Displayport (male, 20p) to DVI-D (male, 24p)
The integrated graphics funktion detects the connected display as such, and outputs the appropriate electical signals - either DisplayPort (without adapter) or HDMI/DVI (with adapter).

[3] mini-SATA (mSATA)
mSATA, not to confuse with "micro SATA", is a newer industry standard that converts the electrical SATA interface (1.5 or 3.0 Gbit/s) to the physical "Mini PCI Express" mini card form factor.

[4] Optional Wireless LAN module:
This Slim PC supports an optional WLAN module which consists of a half-size Mini-PCIe card with IEEE 802.11n functionality and an external antenna with an appropriate antenna cable. Shuttle offers a suitable accessory kit "WLN-S" with two antennas to increase WLAN range.

[5] 4K Ultra-HD resolution
A 4K-display with Ultra-HD resolution (3840 x 2160) should be connected via DisplayPort, as only this port supports a higher refresh rate of 60Hz. Certain displays (e.g. Dell UP2414Q) however require MST mode (Multi-Stream Transport) to be enabled which sends two separate images at half resolution each to the display. These two images are then combined and put in correct order by the Intel graphics driver when in Collage mode. Please note that HBR2-mode (High Bit Rate 2) must be supported by each display to have two of them run at 4K resolution.
The video playback performance depends on the video format, bit rate and the processor used. Daily office applications usually won't require the system to run under full load, however for smooth 4K (2160p) video playback requirements are different. An Intel Core i3 processor or higher is recommended here, since the performance of the integrated graphics engine of a Celeron or Pentium processor might not suffice.

[6] Optional accessory: Drive bay cover
If the XH97V is used without an optical slimline drive, this cover helps close the open bay which can be particularly important in public institutions and prevent from dust and objects being inserted inappropriately. Please contact Shuttle for the optional accessory "Mylar POI-MY01".

[7] Caution: for high ambient temperature over 40°C we strongly recommend to use SSDs instead of hard disk drives.

[8] The optional accessory PHD4 allows for installation of one 3.5" hard drive. However doing so means no other drives such as a slimline DVD drive or a 2.5" HDD/SSD can be used.

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Shuttle Slim-PC Barebone XH97V – Required Components

The following components need to be added to make it a fully-configured Mini-PC:

**2.5” SATA hard disk
and/or Solid State Disk (SSD)
(two drives supported,
max. height: 9.5mm and 12.5mm)**

**optional:
mSATA module**

**Slim SATA DVD drive
12.7mm height**

**One or two memory modules:
DDR3-1333/1600 SO-DIMM
max. 8GB each**

**LGA1150 processor
TDP max. 65W
Core i7 / i5 / i3, Pentium
or Celeron**

**Windows / Linux
Operating System**

Optional Accessories

Stand	VESA	WLAN	3.5“ Rack	Mylar Cover
PS01	PV02	WLN-S	PHD4	MY01

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4th Generation Intel Core Processor Family

LGA1150 socket 22nm "Haswell" processor overview (Date: August 2014)

Processors with TDP>65W are not supported by XH97V (highlighted grey)

Name	Model	Cores	HT	Clock	Turbo	Cache	TDP	Graphics	GPU max.	DDR3
Core i7	4790	4	Yes	3.6 GHz	4.0 GHz	8 MB	**84 W**	HD 4600	1.20 GHz	1333/1600
	4790S	4	Yes	3.2 GHz	4.0 GHz	8 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4790T	4	Yes	2.7 GHz	3.9 GHz	8 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4785T	4	Yes	2.2 GHz	3.2 GHz	8 MB	35 W	HD 4600	1.20 GHz	1333/1600
	4771	4	Yes	3.5 GHz	3.9 GHz	8 MB	**84 W**	HD 4600	1.20 GHz	1333/1600
	4770K	4	Yes	3.5 GHz	3.9 GHz	8 MB	**84 W**	HD 4600	1.25 GHz	1333/1600
	4770	4	Yes	3.4 GHz	3.9 GHz	8 MB	**84 W**	HD 4600	1.20 GHz	1333/1600
	4770S	4	Yes	3.1 GHz	3.9 GHz	8 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4770T	4	Yes	2.5 GHz	3.7 GHz	8 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4770TE	4	Yes	2.3 GHz	3.3 GHz	8 MB	45 W	HD 4600	1.00 GHz	1333/1600
	4765T	4	Yes	2.0 GHz	3.0 GHz	8 MB	35 W	HD 4600	1.20 GHz	1333/1600
Core i5	4690T	4	-	2.5 GHz	3.5 GHz	6 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4690S	4	-	3.2 GHz	3.9 GHz	6 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4690	4	-	3.5 GHz	3.9 GHz	6 MB	**84 W**	HD 4600	1.20 GHz	1333/1600
	4670T	4	-	2.3 GHz	3.3 GHz	6 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4670S	4	-	3.1 GHz	3.8 GHz	6 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4670K	4	-	3.4 GHz	3.8 GHz	6 MB	**84 W**	HD 4600	1.20 GHz	1333/1600
	4670	4	-	3.4 GHz	3.8 GHz	6 MB	**84 W**	HD 4600	1.20 GHz	1333/1600
	4590T	4	-	2.0 GHz	3.0 GHz	6 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4590S	4	-	3.0 GHz	3.7 GHz	6 MB	65 W	HD 4600	1.15 GHz	1333/1600
	4590	4	-	3.3 GHz	3.7 GHz	6 MB	**84 W**	HD 4600	1.15 GHz	1333/1600
	4570TE	2	Yes	2.7 GHz	3.3 GHz	4 MB	35 W	HD 4600	1.00 GHz	1333/1600
	4570T	2	Yes	2.9 GHz	3.6 GHz	4 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4570S	4	-	2.9 GHz	3.6 GHz	6 MB	65 W	HD 4600	1.15 GHz	1333/1600
	4570	4	-	3.2 GHz	3.6 GHz	6 MB	**84 W**	HD 4600	1.15 GHz	1333/1600
	4460T	4	-	1.9 GHz	2.7 GHz	6 MB	35 W	HD 4600	1.10 GHz	1333/1600
	4460S	4	-	2.9 GHz	3.4 GHz	6 MB	65 W	HD 4600	1.10 GHz	1333/1600
	4460	4	-	3.2 GHz	3.4 GHz	6 MB	**84 W**	HD 4600	1.10 GHz	1333/1600
	4440S	4	-	2.8 GHz	3.3 GHz	6 MB	65 W	HD 4600	1.10 GHz	1333/1600
	4440	4	-	3.1 GHz	3.3 GHz	6 MB	**84 W**	HD 4600	1.10 GHz	1333/1600
	4430S	4	-	2.7 GHz	3.2 GHz	4 MB	65 W	HD 4600	1.10 GHz	1333/1600
	4430	4	-	3.0 GHz	3.2 GHz	6 MB	**84 W**	HD 4600	1.10 GHz	1333/1600
Core i3	4370	2	Yes	3.8 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4360T	2	Yes	3.2 GHz	-	4 MB	35 W	HD 4400	1.15 GHz	1333/1600
	4360	2	Yes	3.7 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4350T	2	Yes	3.1 GHz	-	4 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4350	2	Yes	3.6 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4340	2	Yes	3.6 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4330TE	2	Yes	2.4 GHz	-	4 MB	35 W	HD 4600	1.00 GHz	1333/1600
	4330T	2	Yes	3.0 GHz	-	4 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4330	2	Yes	3.5 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4160T	2	Yes	3.1 GHz	-	3 MB	35 W	HD 4400	1.15 GHz	1333/1600
	4160	2	Yes	3.6 GHz	-	3 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4130T	2	Yes	2.9 GHz	-	3 MB	35 W	HD 4400	1.15 GHz	1333/1600
	4130	2	Yes	3.4 GHz	-	3 MB	54 W	HD 4400	1.15 GHz	1333/1600

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Name	Modell	Kerne	HT	Takt	Turbo	Cache	TDP	Grafik	GPU max.	DDR3
Pentium	G3460	2	-	3.5 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3450T	2	-	2.9 GHz	-	3 MB	35 W	HD	1.10 GHz	1333/1666
	G3450	2	-	3.4 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3440T	2	-	2.8 GHz	-	3 MB	35 W	HD	1.10 GHz	1333/1666
	G3440	2	-	3.3 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3430	2	-	3.3 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3420T	2	-	2.7 GHz	-	3 MB	35 W	HD	1.10 GHz	1333/1666
	G3420	2	-	3.2 GHz	-	3 MB	53 W	HD	1.15 GHz	1333/1666
	G3320TE	2	-	2.3 GHz	-	3 MB	35 W	HD	1.00 GHz	1333/1666
	G3250T	2	-	2.8 GHz	-	3 MB	35 W	HD	1.10 GHz	1333
	G3250	2	-	3.2 GHz	-	3 MB	53 W	HD	1.10 GHz	1333
	G3240T	2	-	2.7 GHz	-	3 MB	35 W	HD	1.10 GHz	1333
	G3240	2	-	3.1 GHz	-	3 MB	53 W	HD	1.10 GHz	1333
	G3220T	2	-	2.6 GHz	-	3 MB	35 W	HD	1.10 GHz	1333
	G3220	2	-	3.0 GHz	-	3 MB	53 W	HD	1.10 GHz	1333
Celeron	G1850	2		2.9 GHz	-	2 MB	53 W	HD	1.05 GHz	1333
	G1840T	2		2.5 GHz	-	2 MB	35 W	HD	1.05 GHz	1333
	G1840	2		2.8 GHz	-	2 MB	53 W	HD	1.05 GHz	1333
	G1830	2	-	2.8 GHz	-	2 MB	54 W	HD	1.05 GHz	1333
	G1820TE	2	-	2.2 GHz	-	2 MB	35 W	HD	1.00 GHz	1333
	G1820T	2	-	2.4 GHz	-	2 MB	35 W	HD	1.05 GHz	1333
	G1820	2	-	2.7 GHz	-	2 MB	54 W	HD	1.05 GHz	1333

K = unlocked, **S** = Performance optimized lifestyle, **T** = Power optimized lifestyle, **HT** = Hyper Threading (SMT).
Please refer to the support list for detailed processor support information at *global.shuttle.com*.

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